



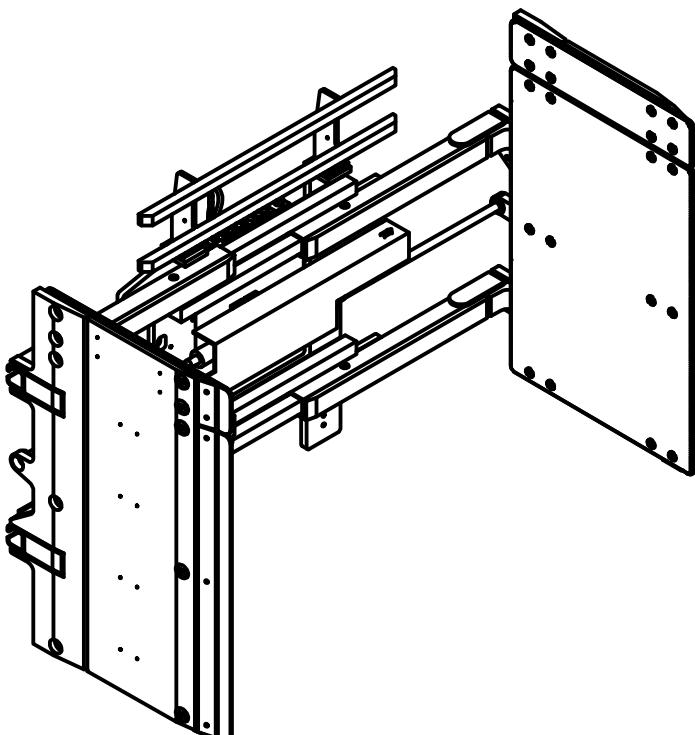
# SERVICE MANUAL / PARTS LIST

## CONTENTS:

### APPLIANCE CLAMP SOFT TOUCH

MODEL #111348

PATENTS PENDING



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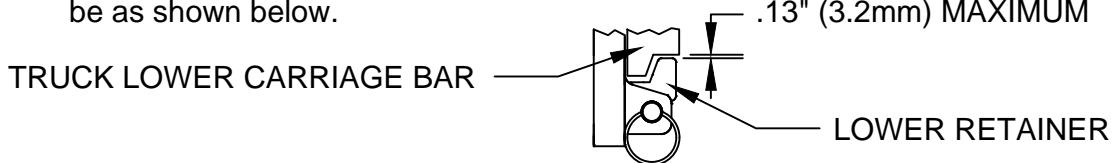
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# LIFT TRUCK REQUIREMENTS

<u>CAPACITY</u>	<u>CLAMP HYDRAULICS</u>
Capacity shown on the Clamp name plate is for the Clamp only. The combined truck and Clamp capacity is provided by the lift truck manufacturer.	<p><b>Recommended Truck Pressure:</b> 2300 to 2500 PSI (159 to 170 bar)</p> <p><b>Hydraulic fluid:</b> petroleum based hydraulic fluid only</p> <p><b>Hydraulic supply group:</b> includes hoses and take-up - one set for each function</p> <p><b>Auxiliary valve:</b> 2 Function (Side Shift &amp; Clamp) = a double auxiliary valve</p> <p><b>Oil Volume Settings:</b> Side Shift = 3 GPM Clamp Open/Close = 7 GPM</p>

## GENERAL INSTALLATION PROCEDURES

1. Make sure that the attachment centering lug is completely seated in truck carriage center notch.
2. Clearance between the lower retainers that hold the attachment to the truck lower carriage bar should be as shown below.



3. Attach truck supply group (take-up) to clamp valve on attachment base.
4. Standing clear of the Clamp attachment cycle the attachment in and out several times. Use caution because partially filled hydraulic lines may cause erratic movement.

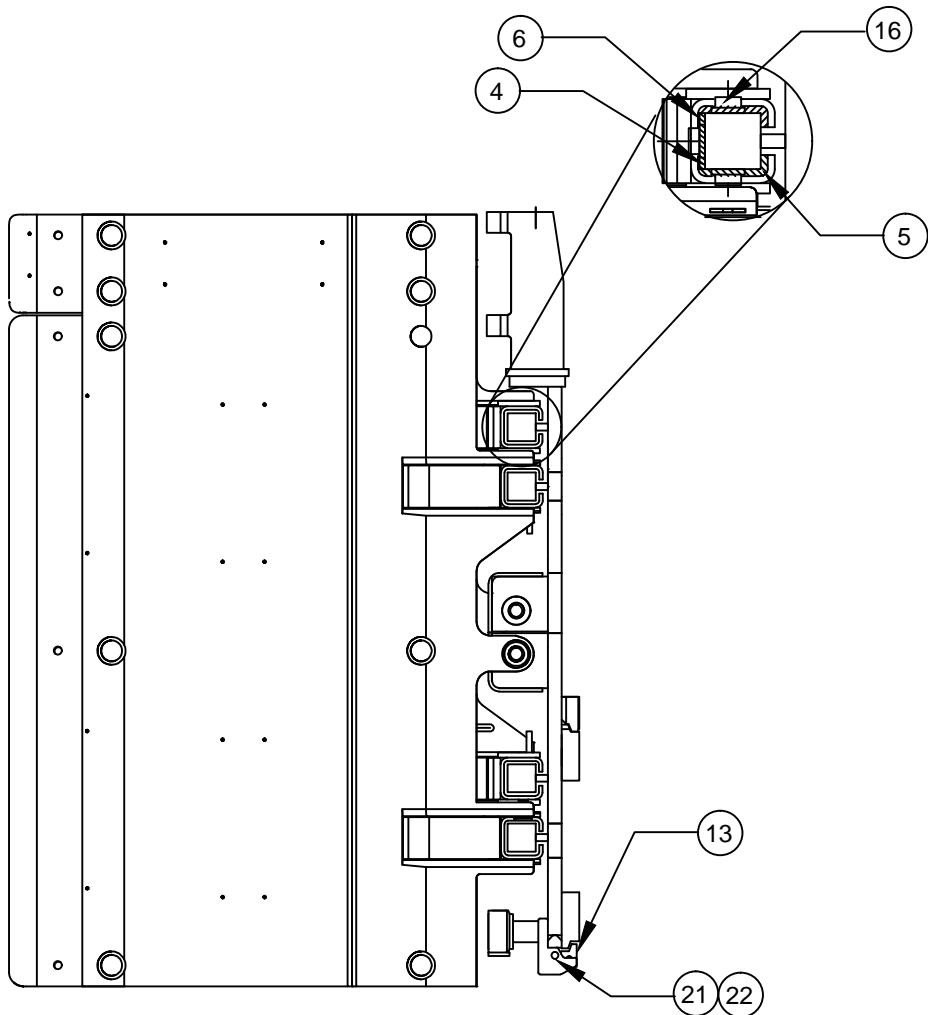
## GENERAL INSPECTION AND MAINTENANCE

1. Check all hydraulic fittings, hoses, cylinders and valves for leakages - repair or replace as required
2. Check bladder/water pressure. If out of operating range adjust as required using Loron Hand Pump #112909. Check clamp force and adjust. (See page 12.)
3. Time Schedule: Check pressure and clamp forces every 3 weeks.  
Water pressure = 4-6 psi              Clamp Force = 1600lbs
4. All bolts should be checked and tightened as required.
5. Check lower retainer clearance - see item 2 in General Installation Procedures above.

# CLAMP ASSEMBLY - 1

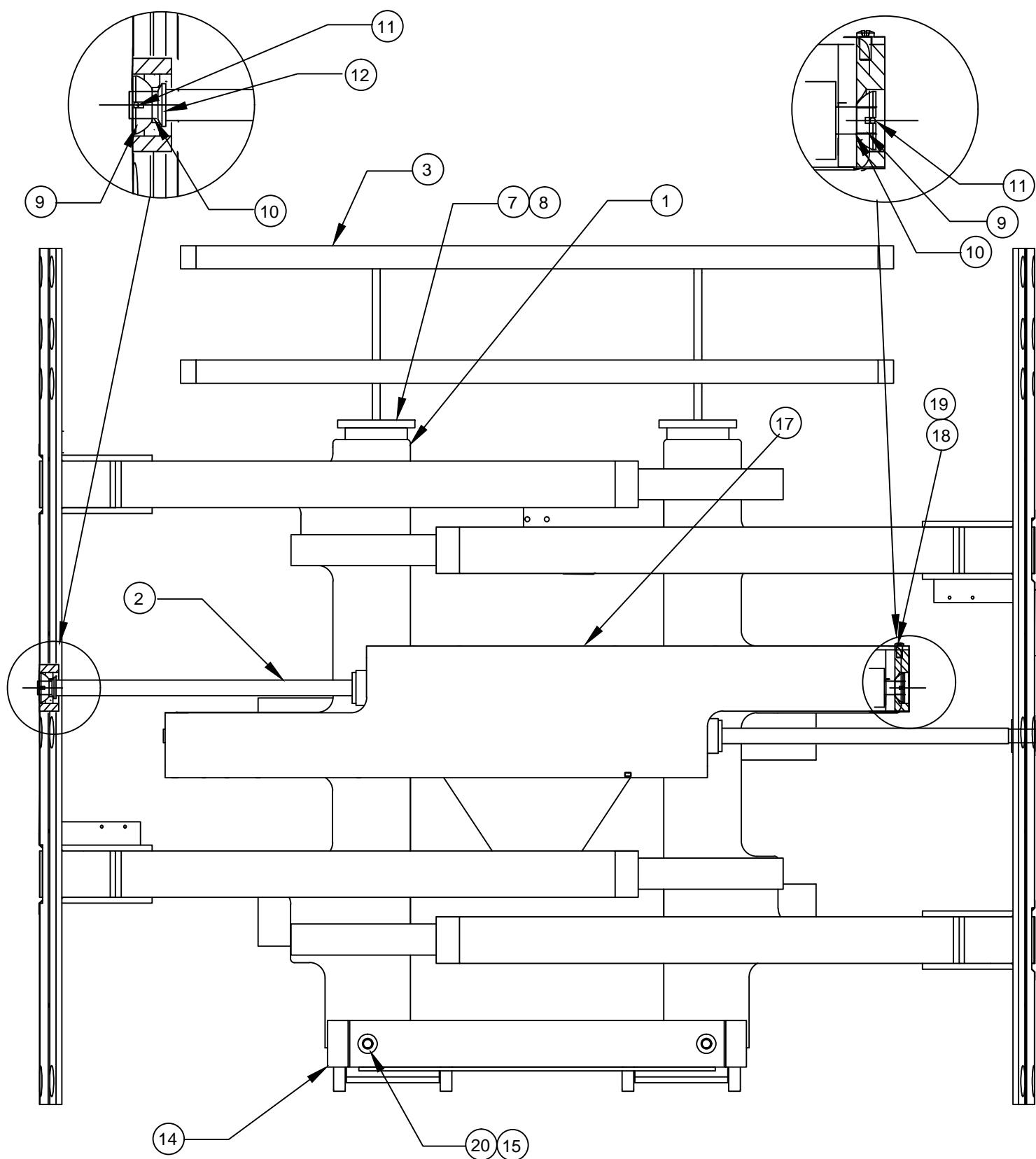
DRAWING REFERENCE 111420

#	QTY	PART #	DESCRIPTION		12	2	111380	CYLINDER ROD WASHER
1	1	111421	FRAME		13	2	107870	LOWER RETAINER
2	2	111714.1	CYLINDER ASSEMBLY		14	1	111423	LOWER LOAD BACKREST
3	1	111439.1	LOAD BACKREST		15	2	11G.1028	BOLT LSP
4	4	111622.1	SLIDE - FLAT		16	12	111619	SLIDE BUTTON
5	8	111621.1	SLIDE - ANGLE		17	1	111222	CYLINDER GUARD
6	12	109212.4	SHIM		18	4	25G.0608	BOLT LSP
7	8	25G.0832	BOLT LSP		19	4	2F.06	WASHER LSP
8	8	4E.08	LOCKWASHER LSP		20	2	4E.10	LOCKWASHER LSP
9	4	111631	BEARING SPHERICAL		21	2	11G.08136	BOLT LSP
10	4	100029.301	ROD CENTERING SEAL		22	2	17D.08	NUT ESNA LSP
11	4	100574.86	COTTER PIN LSP					



# CLAMP ASSEMBLY - 2

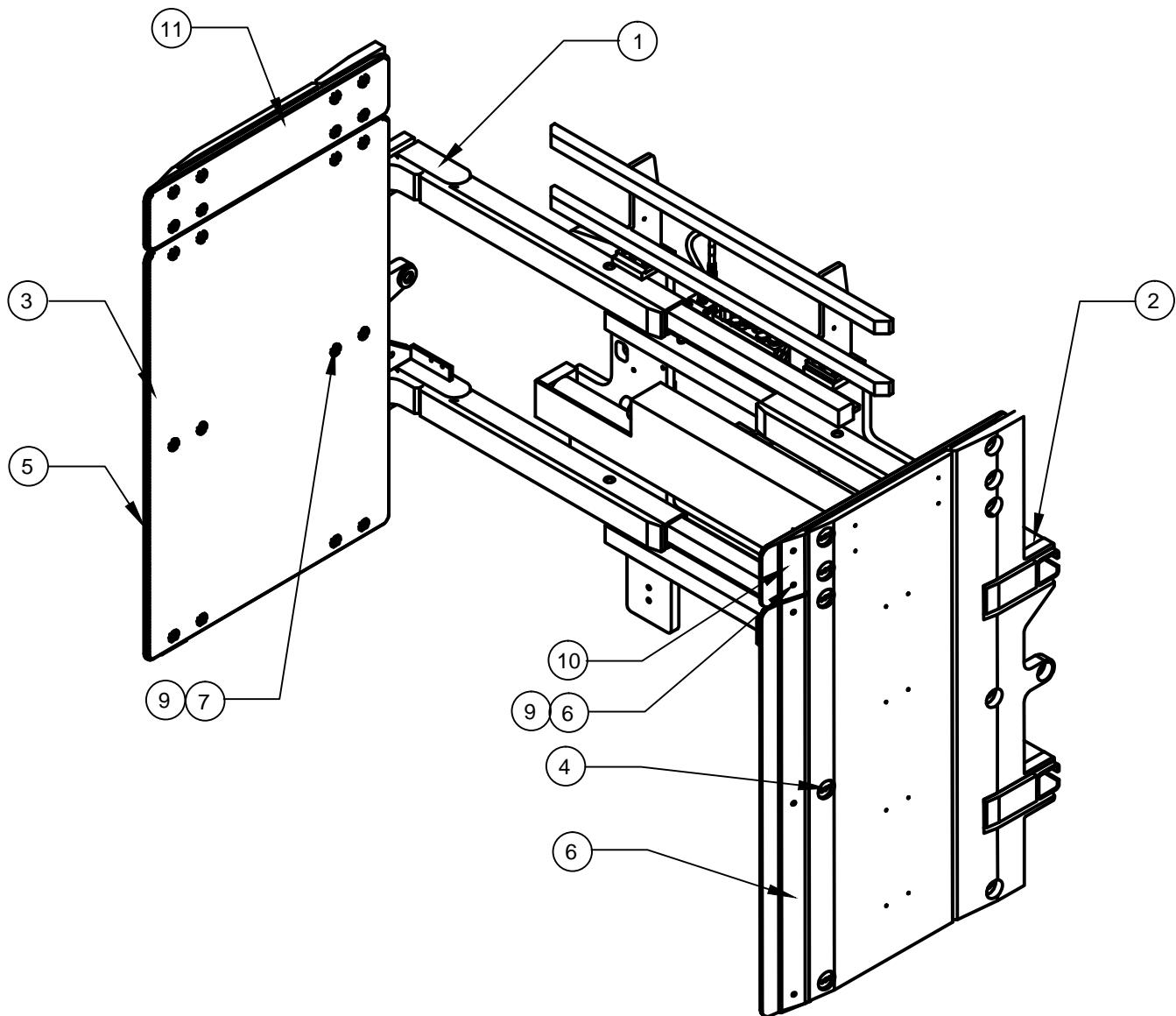
DRAWING REFERENCE 111420



# ARM GROUP ASSEMBLY

DRAWING REFERENCE 111164.2

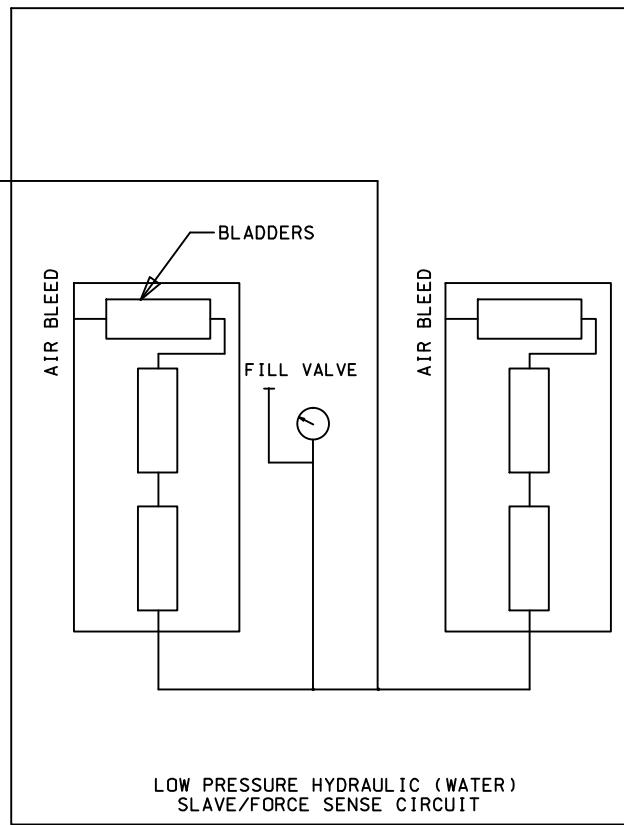
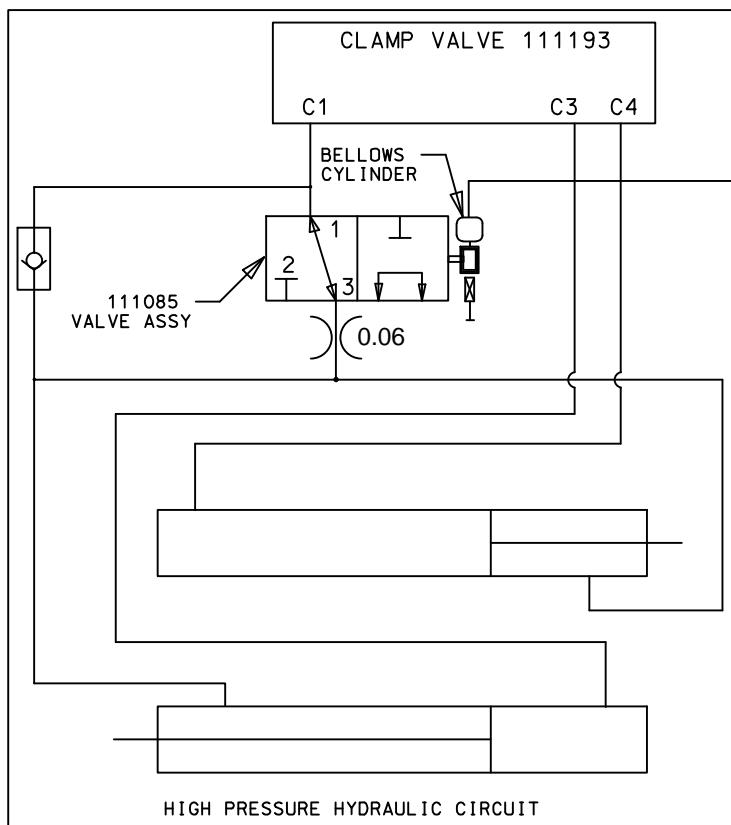
#	QTY	PART #	DESCRIPTION
1	1	111722	ARM WELDMENT RIGHT HAND
2	1	111724	ARM WELDMENT LEFT HAND
3	2	111209	CONTACT PAD (LOWER)
4	20	111031	RETAINING NUT
5	1	111216	TIP PLATE WELDMENT RIGHT HAND
6	1	111218	TIP PLATE WELDMENT LEFT HAND
7	20	1C.0820	BOLT LSP
8	10	1C.0812	BOLT LSP
9	30	108088	SPRING WASHER
10	2	112057	TIP PLATE UPPER
11	2	111210	CONTACT PACT (UPPER)



# BLADDER HYDRAULIC ASSEMBLY - 1

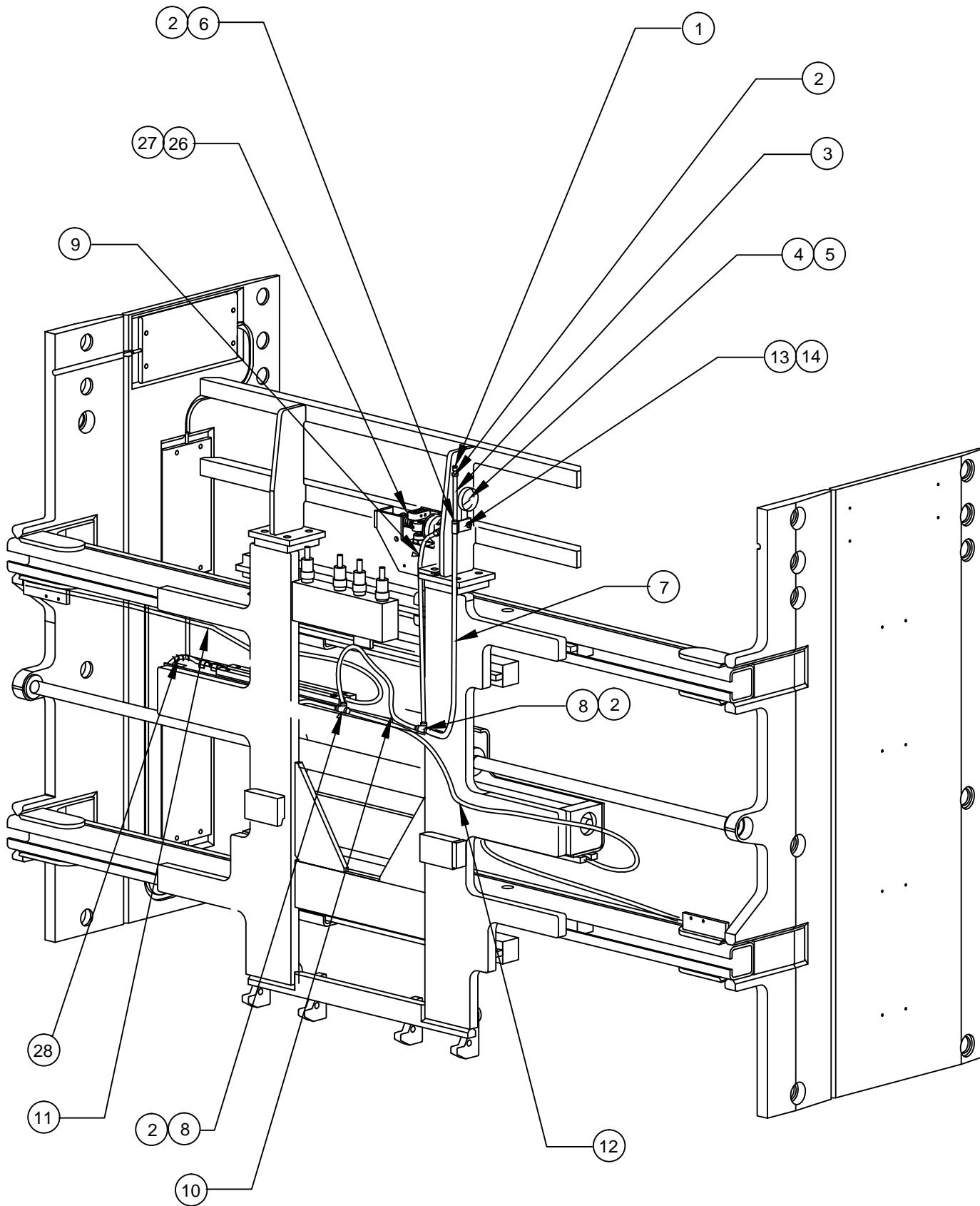
DRAWING REFERENCE 111440.1

#	QTY	PART#	DESCRIPTION	16	2	111290.0094	HOSE
1	3	111350	AIR TANK VALVE	17	2	111290.0166	HOSE
2	9	111295	HOSE CLAMP	18	2	111290.0114	HOSE
3	1	111290.0025	HOSE	19	24	9G.0412	BOLT
4	1	111296	PRESSURE GAUGE	20	12	111471	CLAMP BAR
5	1	111543.01	90° ELBOW FITTING	21	8	109256	HOSE CLAMP
6	1	111292	BRANCH TEE	22	8	25G.0508	BOLT
7	1	111290.0220	HOSE	23	2	113026.0360	COVER HOSE
8	1	111293	RUN TEE	24	4	111128	HOSE GUIDE
9	1	111290.0180	HOSE	25	12	25G.0512	BOLT
10	1	111290.0082	HOSE	26	1	111085	CLAMP FORCE CONTROL VALVE -REF-
11	1	111290.1170	HOSE	27	1	111289	PIPE ELBOW
12	1	111290.1115	HOSE	28	2	111510	SPRING
13	1	111299	HOSE CLIP	29	24	111878	19 GA. STAINLESS STEEL WIRE TIE
14	1	25G.0516	BOLT	30	2	112391	MODIFIED BLADDER
15	4	111030	BLADDER				



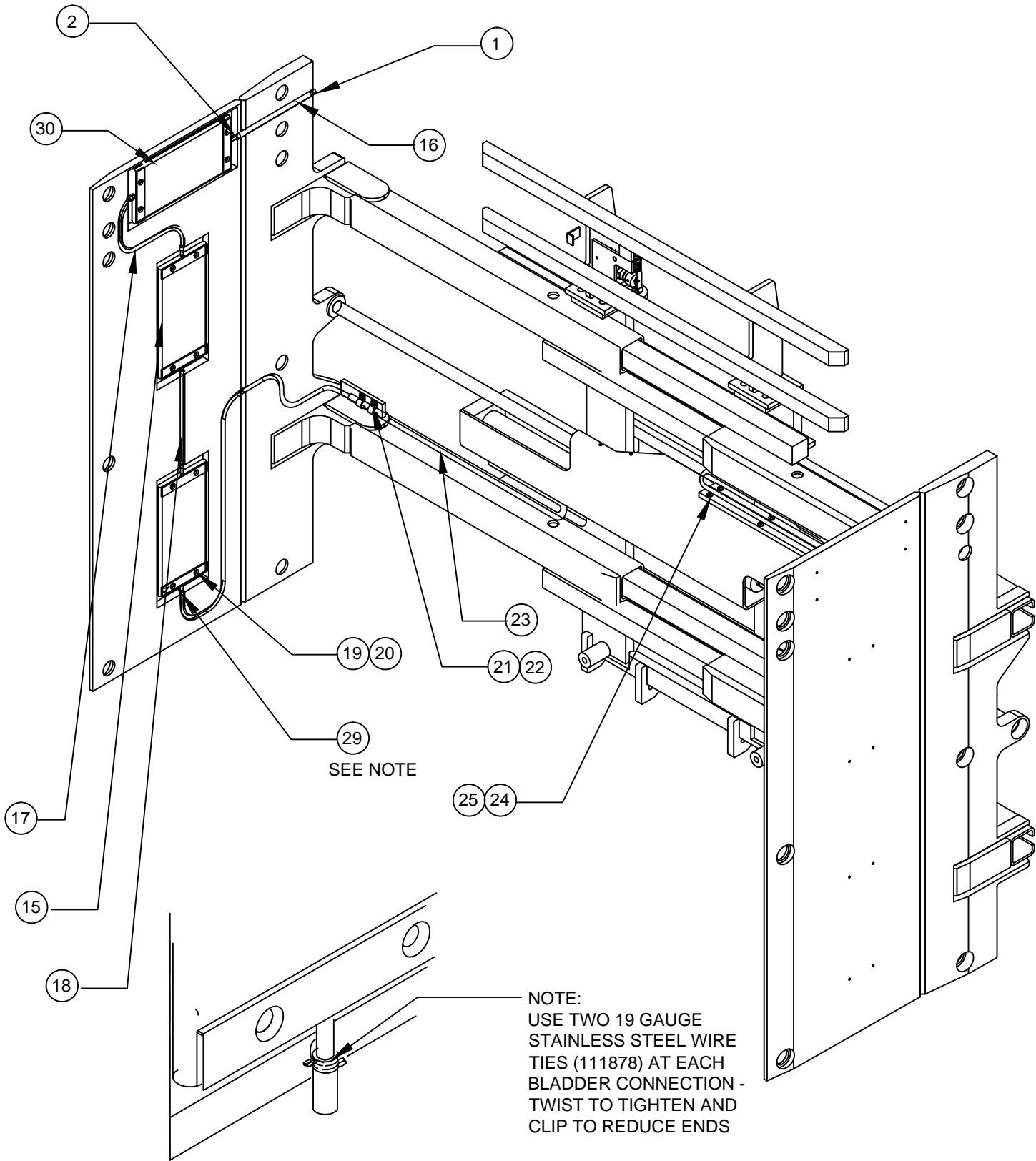
# **BLADDER HYDRAULIC ASSEMBLY - 2**

**DRAWING REFERENCE 111440.1**



# BLADDER HYDRAULIC ASSEMBLY - 3

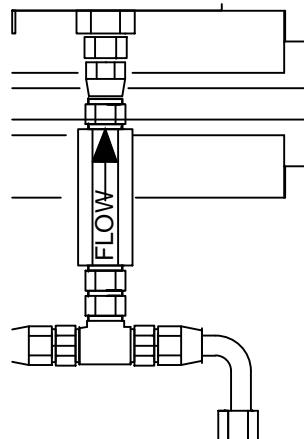
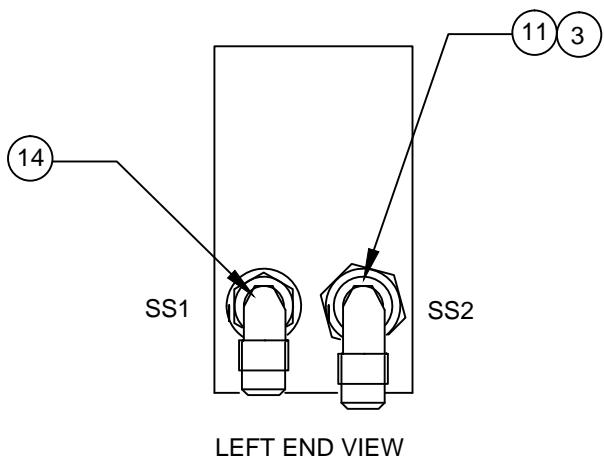
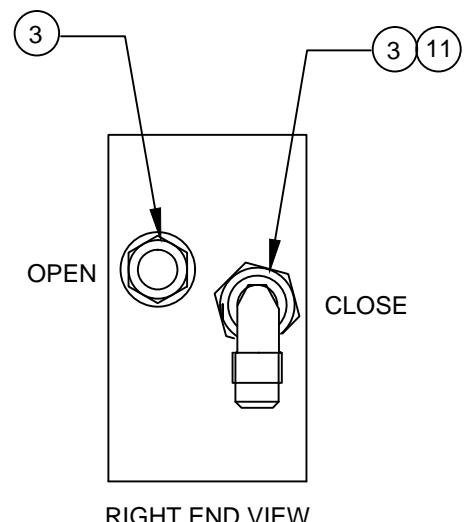
DRAWING REFERENCE 111440.1



# HYDRAULIC ASSEMBLY - 1

DRAWING REFERENCE 111441

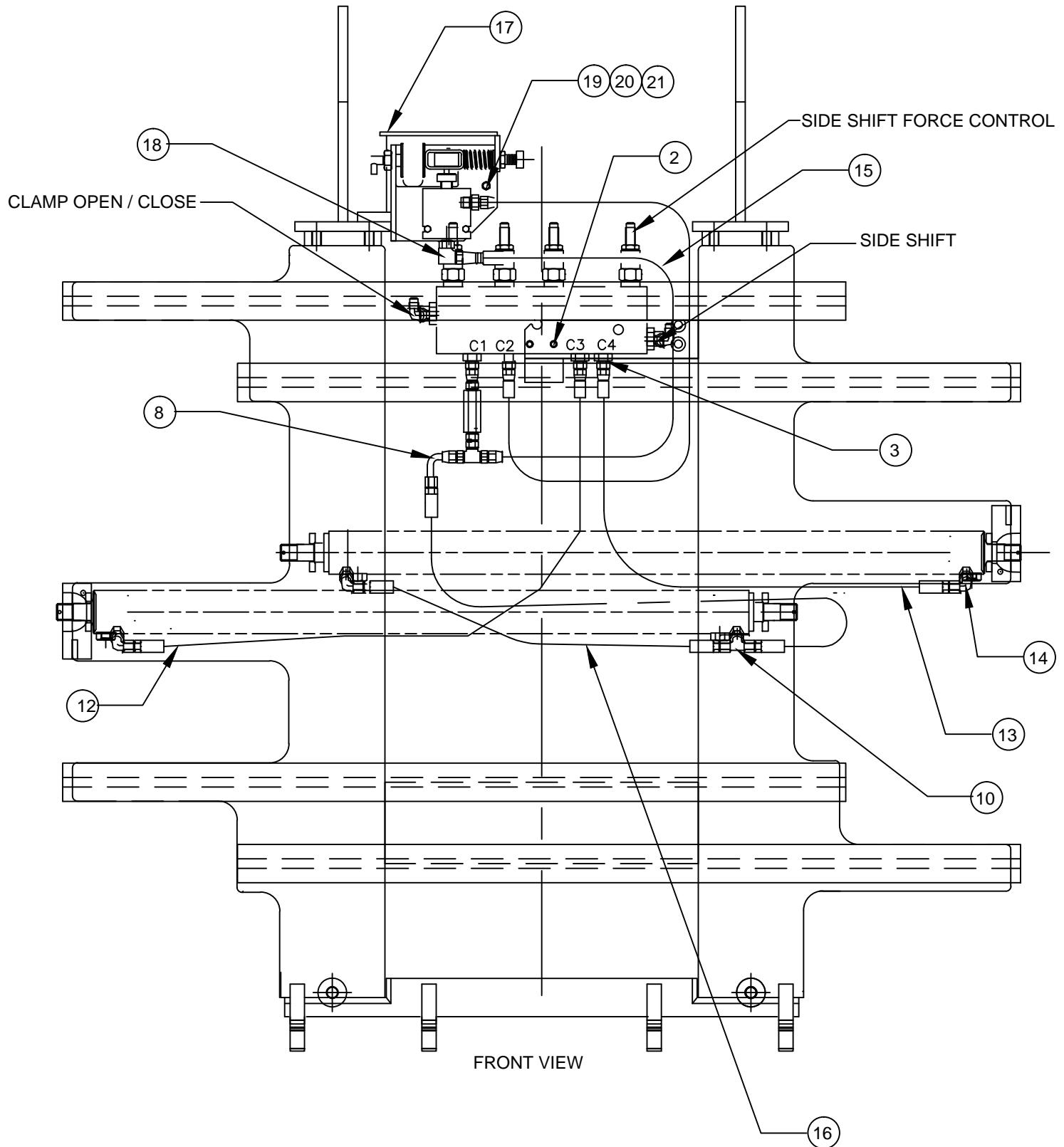
#	QTY	PART #	DESCRIPTION
1	1	111193	CLAMP VALVE
2	2	25G.0524	BUTTON HEAD BOLT
3	7	100676.06	STRAIGHT THREAT ADAPTER FITTING
4	2	111518.06	FITTING ADAPTER 04 PIPE - 06 JIC STRAIGHT
5	1	111085	DIRECTIONAL VALVE ASSEMBLY
6	1	100227.05	FITTING UNION TEE
7	1	111123	IN-LINE CHECK VALVE
8	1	103441.0352	HOSE ASSEMBLY
9	1	100674.0290	HOSE ASSEMBLY
10	1	100678.05	O-RING TEE BRANCH FITTING #6
11	2	100440.05	90° FITTING-SWIVEL #6 JIC
12	1	100674.0340	HOSE ASSEMBLY
13	1	100674.0275	HOSE ASSEMBLY
14	4	100095.05	90° FITTING #6 O-RING ELBOW
15	1	100674.0410	HOSE ASSEMBLY
16	1	100674.0200	HOSE ASSEMBLY
17	1	111514	VALVE GUARD
18	1	100222	FITTING 90° RESTRICTOR
19	1	25G.0520	BUTTON HEAD BOLT
20	1	4F.05	WASHER FLAT
21	1	17D.05	NUT NYLOCK



FLOW DETAIL

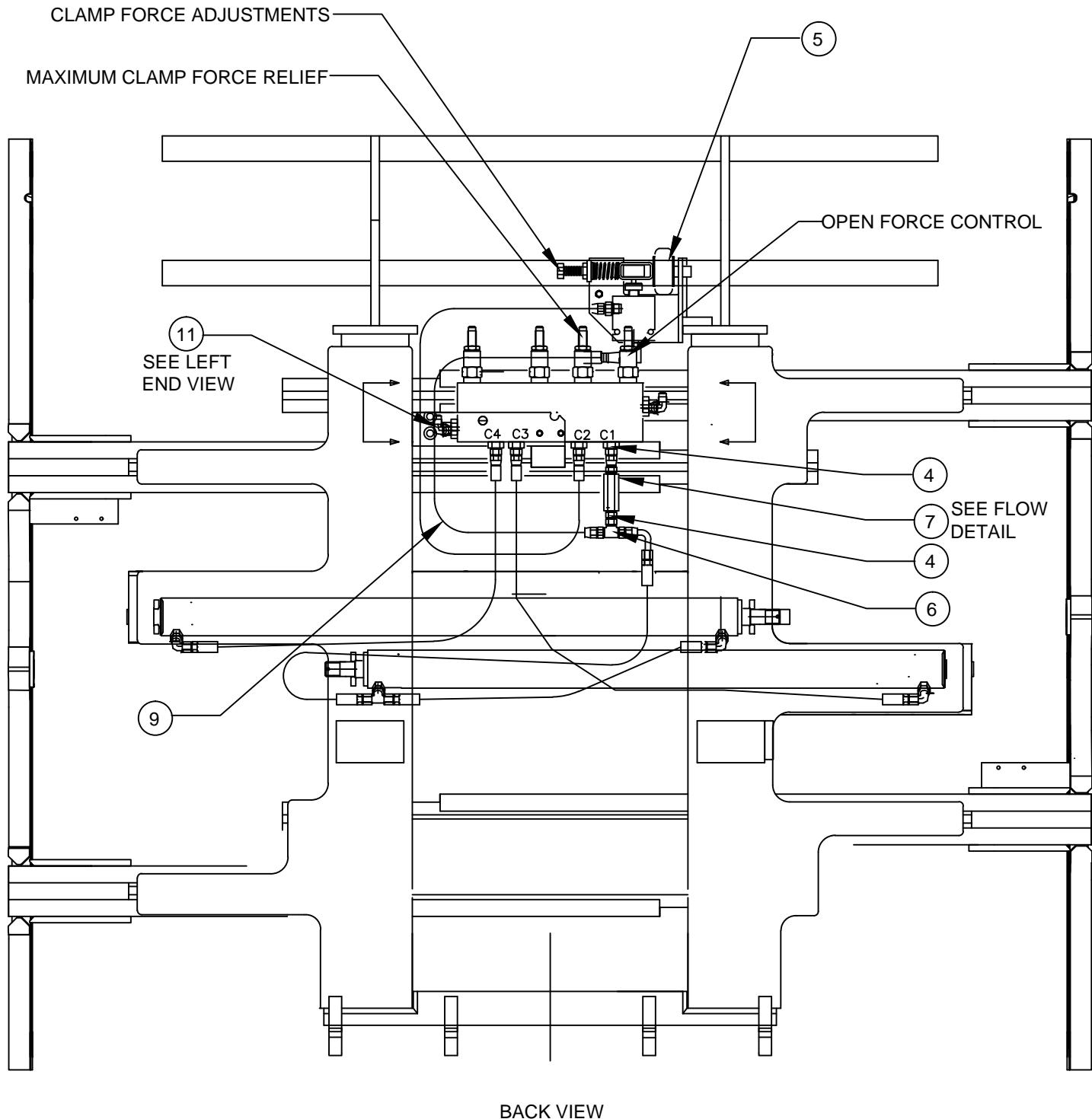
# HYDRAULIC ASSEMBLY - 2

DRAWING REFERENCE 111441



# HYDRAULIC ASSEMBLY - 3

DRAWING REFERENCE 111441

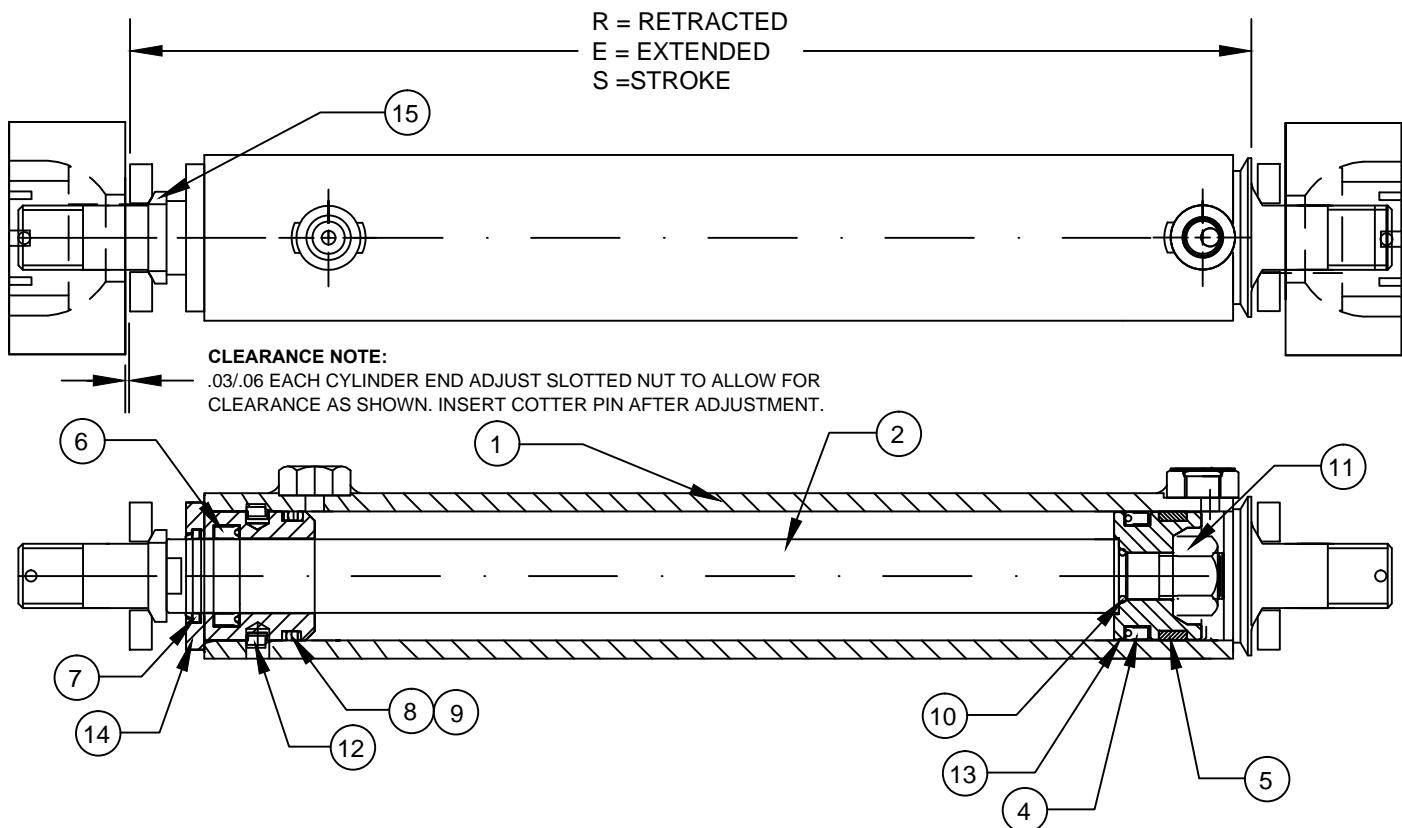


# CYLINDER ASSEMBLY

DRAWING REFERENCE 111714.1

PART #	R	E	S	NET STROKE
111714.1	35.08	66.16	31.08	31.08

#	QTY	PART #	DESCRIPTION	9	1	100028.2	BACK-UP RING LSP
1	1	111715.1	TUBE WELDMENT	10	1	100029.201	"O" RING LSP
2	1	111717.1	ROD	11	1	27D.10	NUT SELF LOCKING LSP
3	1	111482	SEAL KITS (NOT SHOWN)	12	1	100027.7	LOCKWIRE LSP
4	1	100032.6	POLY-PAK "B" LSP	13	1	111374	PISTON
5	1	102099.1	WEAR RING LSP	14	1	111373	GLAND
6	1	100031.7	POLY-PAK LSP	REF.			
7	1	102098.5	ROD WIPER LSP	15	1	111380	CYLINDER WASHER
8	1	100029.2	"O" RING LSP				



## CYLINDER SERVICE

- Prior to assembly lubricate seals, cylinder bore and rod with STP.
- Inspect all parts for scratches, nicks and gouges- -replace all damaged components.
- Inspect cylinder bore and rod for scoring- -replace if scored
- Avoid damage to seal grooves- -use a dull screwdriver for seal removal
- Torque piston nut to 110 FT/LBS. (15.3 kg-m)

# CLAMP ADJUSTMENTS

## CLAMP FORCE CHECK/ADJUSTMENT

1) Check water pressure. If out of operating range fill with Loron hand pump #112909.

Note: when operating in below freezing temperatures us RV antifreeze in place of water.

2) Check the clamp force centered on lower pad

## OPEN FORCE CHECK/ADJUSTMENT

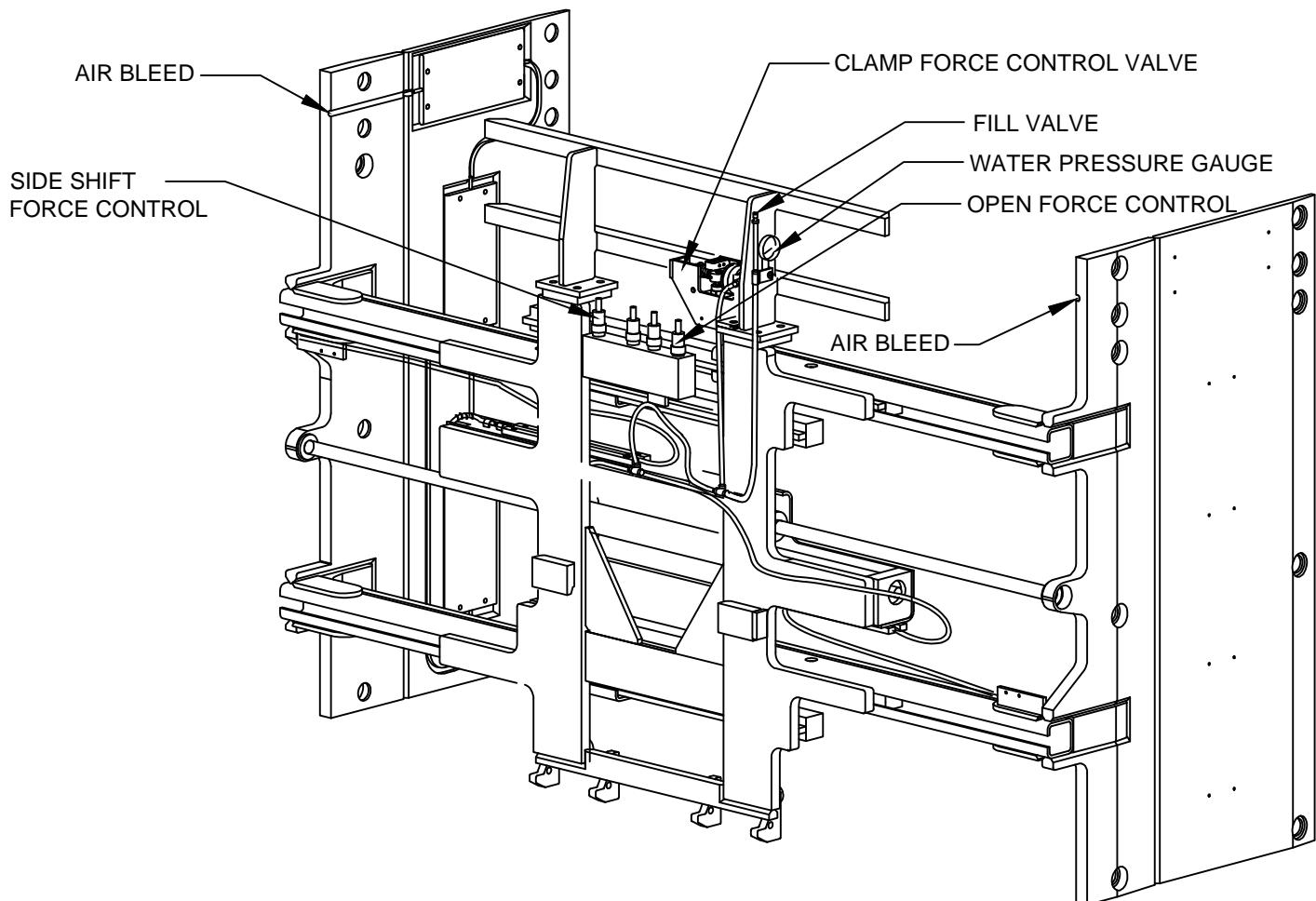
Open the arms against a force fixture and adjust for desired maximum force.

## SIDE SHIFT FORCE ADJUSTMENT

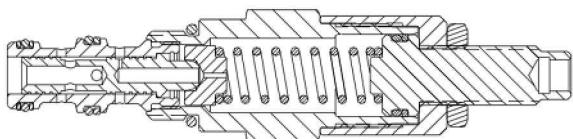
1) Clamp on the heaviest load that will be handled

2) Adjust the side shift force down until the arms stop

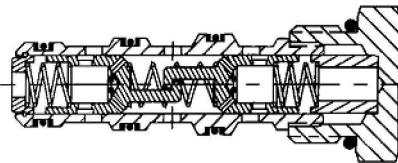
3) Turn the adjusting screw one turn in.



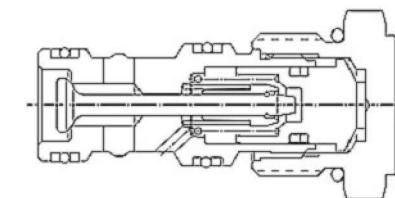
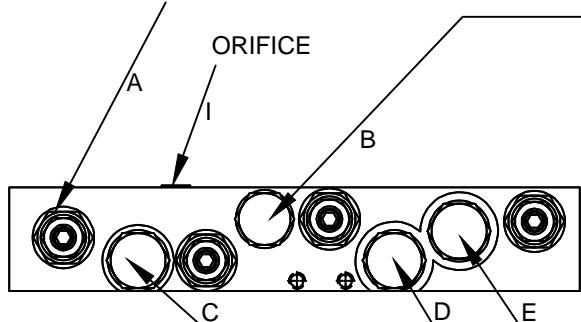
# CONTROL VALVE



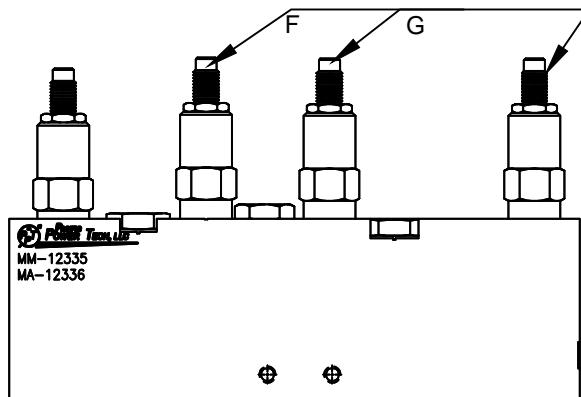
**111627 REDUCE/REL. VALVE TORQUE 15-20 FT/LBS  
SEAL KIT 112065**



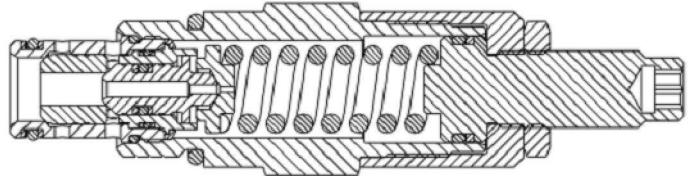
**103813 FLOW DIVIDER TORQUE  
10-12 FT/LBS 104711 SEAL KIT**



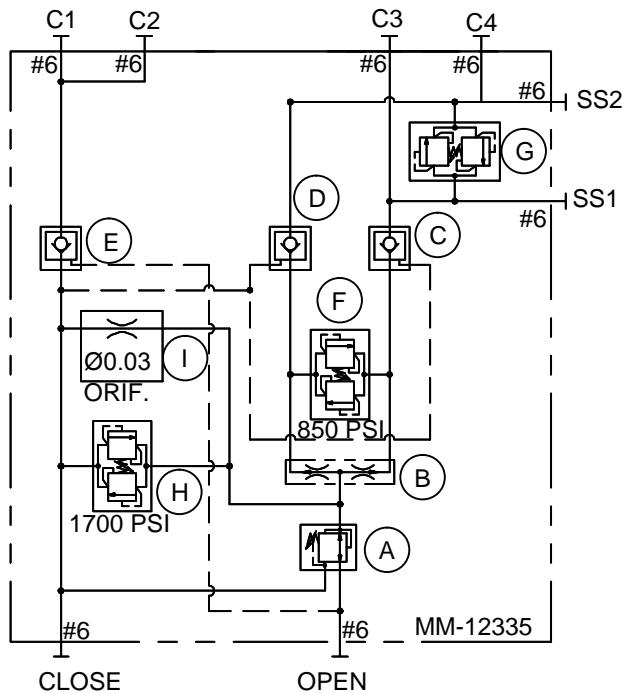
**111244 CHECK VALVE TORQUE  
30-35 FT/LBS SEAL KIT 112059**



**112406.1 & 112406.2(G) RELIEF TORQUE  
20-25 FT/LBS SEAL KIT 112064**



## HYDRAULIC SCHEMATIC



### NOTE:

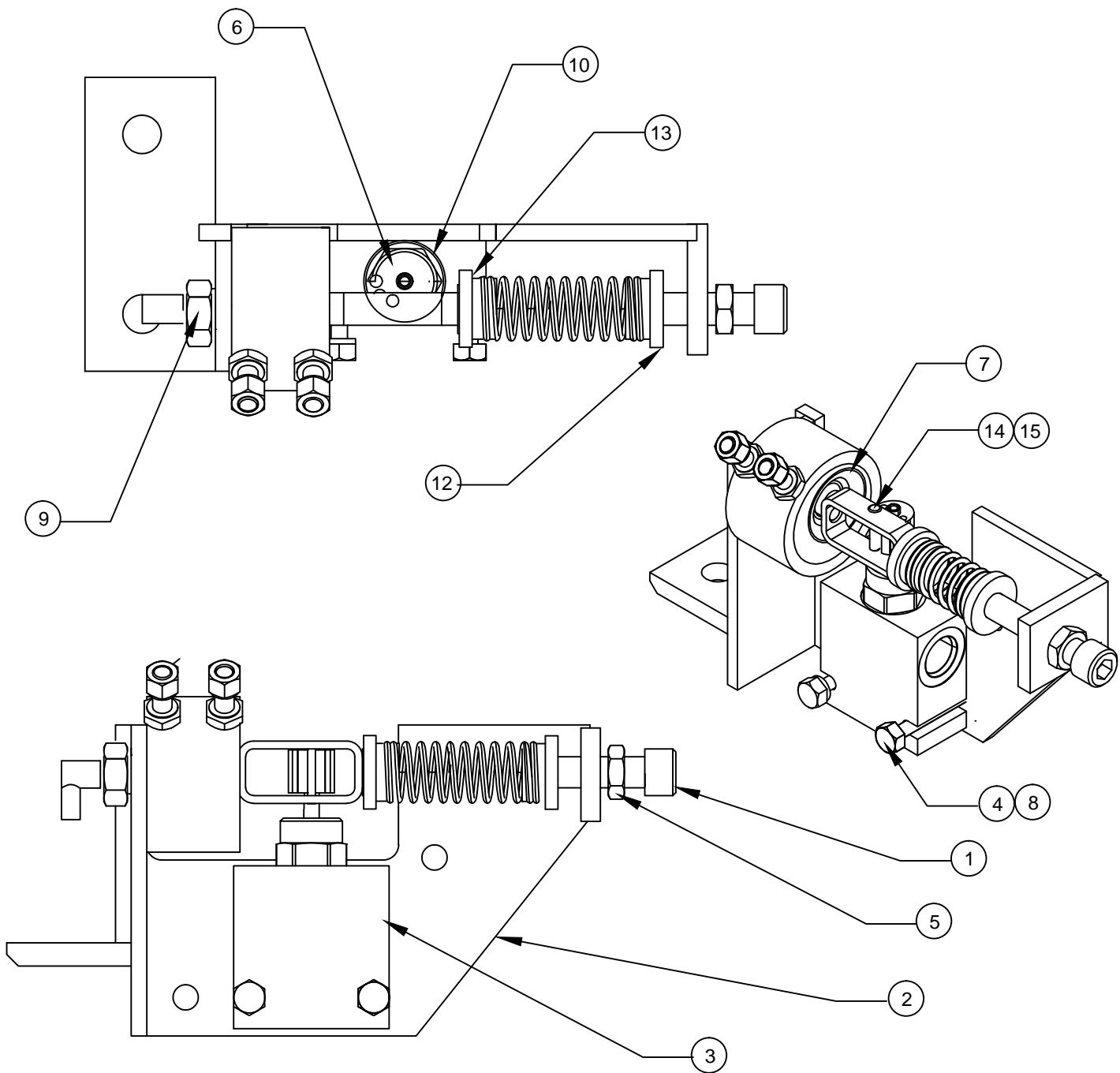
1. Lubricate threads & seals prior to assembly.

QTY	PART #	DESCRIPTION
1	111627	PRESSURE REDUCE / RELIEF VALVE
1	103813	FLOW DIVIDER
1	112406.2	BI-DIRECTIONAL RELIEF VALVE
2	112406.1	RELIEF VALVE
3	111244	P.O. CHECK CARTRIDGES

# CLAMP FORCE CONTROL VALVE

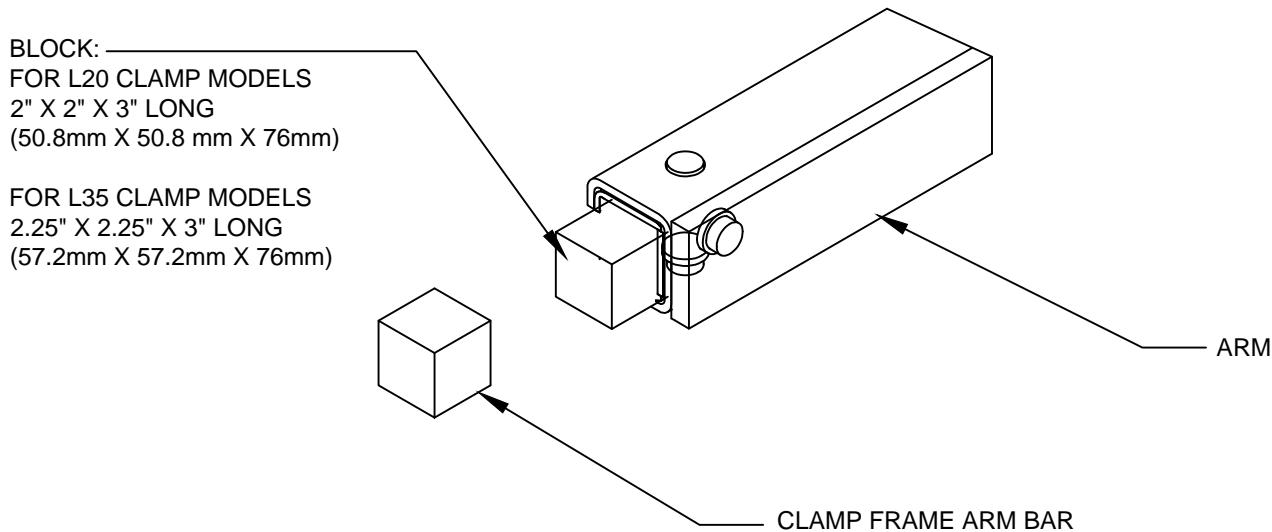
DRAWING REFERENCE 111085

#	QTY	PART #	DESCRIPTION	9	1	1D.10	HEX NUT
1	1	11G.0844	BOLT	10	1	111328	WHEEL HOUSING
2	1	111573	MOUNTING PLATE WELDMENT	11	1	111097	SPRING
3	1	111094	DIRECTIONAL	12	1	111098	SPRING TENSION CAP
4	2	4E.04	LOCKWASHER	13	1	111572	SPRING CAP
5	1	7D.08	JAM NUT	14	1	111655	CLEVIS PIN
6	1	110906	WHEEL	15	1	100574.28	COTTER PIN
7	1	111091	AIR SPRING				
8	2	1C.0424	BOLT				



# ARM SLIDE & SHIM REPLACEMENT

1. To replace the slides extend the arms to the fully open position. Release system pressure prior to removing the arms by turning the truck off and working the side shift and clamp function controls several times.
2. Support the arm with an overhead crane or lift truck. Be sure to secure the chain or sling in a manner that prevents the arm from falling out of the chain or sling when hanging free of the clamp frame.
3. Remove the cotter pin, slotted nut and spherical bearing from the end of the clamp cylinder rod. Keeping hands and feet clear, carefully slide the clamp arm off of the clamp frame.
4. Install the arm on the clamp frame ensuring that the arm moves freely without excessive binding. If the arm is too loose or too tight add or remove shims as required. Once the clearance is satisfactory insert the cylinder rod into the cylinder anchor on the arm. Install the spherical bearing, nut and cotter pin onto the cylinder rod end. Be sure to leave .03" - .06" (.7mm to 1.5mm) clearance to allow the cylinder to "float" on its mountings (see page 11). Remove the cotter pin, slotted nut and spherical bearing from the end of the clamp cylinder rod. Keeping hands and feet clear, carefully slide the clamp arm off of the clamp frame.



5. Inspect slides and slide buttons for wear. Slides may be rotated end-for-end and re-used if excessively worn on the outer end only. Extra shims may be used to tighten operating clearance on slightly worn slides. Replace any slides worn to less than .06" (1.5mm) thick or any slide that is deeply scored or broken.
6. To aid in replacing the slides a block may be fashioned of wood or another convenient material to the dimensions shown above. The block is inserted in the end of the arm to hold the slides, shims and buttons in position while the arm is inserted over the arm bars on the clamp frame. The block is expelled out the opposite end of the arm as the arm is pushed onto the frame.
7. Prior to installing the arm the block may be used to determine the number of shims to place under the slides. Adjust the clearance between the slides and the block to provide approximately .06" (1.5mm) running clearance between the slides and arm when installed.

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# TROUBLE SHOOTING GUIDE

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## LOADS SLIPPING OR DROPPING

### POSSIBLE CAUSES

1. Clamp force set too low
2. Internal leakage in cylinder.
3. Load too heavy for the clamp capacity
4. Load may not be stacked correctly or may need to be unitized
5. Bent arms or contact pads
6. Damaged / leaking hydraulic hose

### SOLUTIONS

1. Adjust clamp force page 12
2. Replace cylinder seals. If tube, piston or rod is scored replace with new parts.
3. Consult factory.
4. Restack or unitize load (shrink wrap)
5. Consult factory.
6. Replace damaged hose

## CRUSHING LOADS

### POSSIBLE CAUSES

1. Clamp force set too high
2. Bent arms or contact pads
3. Leak in bladder system

### SOLUTIONS

1. Adjusting clamp force, page 12
2. Consult factory
3. Check for leaks and repair.

## ARM CHATTERING OR ERRATIC MOVEMENT

### POSSIBLE CAUSES

1. Bent clamp arms
2. Nylon slides sticking  
Note: Sticking slides can cause inconsistent clamp force measurements
3. Nylon slides worn, broken or missing.

### SOLUTIONS

1. Consult factory
2. Clean slides if necessary, the slides are self lubricating.
3. Replace damaged slides, shims and retaining buttons.